TOSHIBA

Leading Innovation

T300MVi®

4160 V MEDIUM VOLTAGE DRIVE

SMALL FOOTPRINT – LARGE SAVINGS

Toshiba's T300MVi® 4160 V medium voltage adjustable speed drive is the most advanced drive in the industry. No other drive in the market features the latest five-level Pulse Width Modulation (PWM) with Neutral-Point Clamping (NPC) technology. This advanced technology allows for a smaller footprint, a reduced component count, and ultimately, lower costs. In addition, it incorporates the latest safety technology, making it one of the safest designs on the market.

- Three Cables In, Three Cables Out
- 24-Pulse Harmonic Cancellation Complies with IEEE-519-1992
- Higher True Power Factor (0.96) than Running Motors Across-the-Line
- Smaller Footprint Through Compact Power Modules, Standard Copper-Wound Isolation Transformer, & Air-Cooling System
- Robust, High-Quality Medium Voltage IGBT Technology, Transistors, & Control Components
- Advanced Electronics to Reduce Component Count
- Additive Five-Level PWM Output Voltage with No Neutral Shift
- Ten-Year Mean Time Between Failures

ADVANCED FEATURES FOR MAXIMUM DRIVE PERFORMANCE

- ***A Three Cables In, Three Cables Out Feature*** incorporates a standard pad-lockable input fused disconnect switch with a vacuum contactor and interlocked doors and eliminates the need for a secondary power source, improving the safety of system personnel.
- ***A Small Footprint*** allows the drive to be easily retrofit and paired with medium voltage motors without upgrading the motor insulation. Additionally, it eliminates the need for an output transformer and allows for the use of standard bearings without grounding or isolation means.
- ***A 24-Pulse Isolation Transformer*** provides phase-shift cancellation capabilities, eliminating issues concerning harmonic injections into bus-fed equipment. As a result, the T300MVi resembles a linear load on the incoming AC line.
- ***Five-Level PWM Output*** closely simulates a true sinewave by employing several layers of switching devices to provide a smooth output waveform to the motor, virtually eliminating motor failures caused by insulation stress and long lead-length issues.
- ***Medium Voltage IGBT Technology*** has continually proven to be the most reliable and best performing means of speed control in our adjustable speed drives. Toshiba has successfully developed, utilized, and mastered this technology. The T300MVi pairs the most advanced transistor technology with the most robust multi-level topology and controls it with one of the fastest industrial processors in the world.
- ***A Versatile Control Interface*** offers eight digital inputs, six digital outputs, two analog inputs, and eight analog outputs as standard. Each of these input/outputs can be programmed to a variety of different functions for ultimate flexibility.
- ***A Plain-English LCD Electronic Operator Interface (EOI)*** allows for quick, user-friendly programming. Faults are logged containing date and time stamps.
- ***Toshiba's Proprietary Windows®-Based WiTool Software*** is designed to offer a full range of programming and monitoring tools. Operating data can be captured with the snapshot feature and up to 12 drive signals can be trended. In addition, the *WiTool* offers trace-back data for detailed fault analysis.

COMMUNICATION OPTIONS

The T300MVi drive offers a wide array of easily installed option boards. These boards allow the user to communicate with a wide variety of systems. Options include:

- DeviceNet
- Modbus RTU
- Modbus TCP/IP
- Profibus
- Tosline-S20

ADDITIONAL OPTIONS

The T300MVi can be supplied with additional options to expand control, allow greater flexibility, or provide better protection for a user's application. These options include:

- Redundant Fans
- Drive & Motor Space Heater
- Communication Cards
- Door-Mounted Equipment: Meters, Pilot Lights, Speed Potentiometer, & Switches
- Output dV/dT Filters for Up to 2,000 ft. of Motor Cable Length
- Direct Online Bypass
- Sinewave Output Filters
- Solid State Starter Bypass
- Reduced Voltage Autotransformer Bypass
- Sync-Xfer/Capture (Multiple Motors Synchronize Transfer & Capture)
- High Voltage Input Up to 15 kV (Requires Increase in Footprint)
- Synchronous Motor Control (AC Brushless/DC Brush Type)
- Wound Rotor Motor

OTHER SPECIAL FEATURES

- Voltage Source Inverter (VSI) with Simple & Reliable Volts/Hertz Control or Vector Control (With or Without Encoder)
- Retrofit Ready
- Air-Cooled Solutions from 300 to 10,000 HP

APPLICABLE INDUSTRIES

- Aggregate
- Chemical
- Mining & Minerals
- Oil & Gas
- Pulp & Paper
- Water/Wastewater

APPLICABLE APPLICATIONS

- Conveyors
- Extruders
- Blowers
- Mixers
- Test Stands
- Crushers
- Compressors
- Mills
- Fans
- Pumps

T300MVi

MODEL RANGE	300 to 600 HP				700 to 1000 HP				1250 to 2000 HP				2250 to 2500 HP		3000 to 3500 HP		4000 to 6000 HP					7000 HP*	8000 to 10000 HP*		
Voltage Rating	4160 VAC																								
Dimensions (H x W x D)	103.7 x 48 x 48 in.				103.7 x 60 x 48 in.				103.7 x 122 x 43.4 in.				103.7 x 164 x 49.5 in.		103.7 x 174 x 49.5 in.		103.7 x 222 x 49.5 in.					103.7 x 307.5 x 60 in.	103.7 x 402.5 x 60 in.		
Weight	6,200 lbs.				7,600 lbs.				12,500 lbs.				16,500 lbs.		19,000 lbs.		27,750 lbs.					37,500 lbs.	64,800 lbs.		
Current Rating (A):	37	50	62	74	87	99	112	124	155	186	217	248	279	310	372	434	496	558	620	682	744	868	992	1100	1240
Nominal HP** (4160 V)	300	400	500	600	700	800	900	1000	1250	1500	1750	2000	2250	2500	3000	3500	4000	4500	5000	5500	6000	7000	8000	9000	10000

POWER REQUIREMENTS	
Input Tolerance	Voltage: ±10%; Frequency: ±5%
Main Circuit	Three-Phase 4160 V; Integrated 24-Pulse Copper-Wound Isolation Transformer; Five-Level NPC Medium Voltage IGBT Output
Control Circuit	Integral to Main Transformer; Includes 460 V & PT for 120 V Control
Output Frequency	0 to 120 Hz
CONTROL SPECIFICATIONS INPUT	
Control Method	Five-Level Pulse-Width Modulation (PWM) Output Control with Neutral-Point Clamping (NPC)
V/Hz Control	V/Hz, Sensorless Vector Control, Variable Torque, Closed-Loop Vector Control, & Constant Torque (Optional)
PWM Carrier Frequency	Fixed at 2 kHz
Frequency Setting	4 to 20 mA, 0 to 10 VDC Serial Communication Input, & Rotary Encoder Integrated into EOI
Speed Regulation	Open Loop: Up to 0.5%; Closed Loop: Up to 0.1%
Main Protective Functions	Current Limit, Overcurrent, Overload, Undervoltage, Overvoltage, Ground Fault, CPU Error, & Soft Stall
Overload Current Rating	100% Continuous; 115% for One Minute Every 20 Minutes (1000, 2000, & 6000 HP at 110%)
CONTROL INTERFACE	
Digital Input	Eight Discrete Input Terminals with Programmable Functions
Digital Output	Six Available Digital Programmable Outputs (One Used Internal to Drive)
Analog Input	Two Selectable Currents (0/4 to 20 mA) or Voltage (0 to 10 VDC) Input Signals
Analog Output	Eight Selectable Currents (0/4 to 20 mA) or Voltage (0 to 10 VDC) Output Signals with Programmable Function
Communication Ports	Profibus, Modbus RTU, Modbus, TCP/IP, TOSLINE-S20, & DeviceNet
SAFETY FEATURES	Standard Pad-Lockable Input Fuse Disconnect Switch with Vacuum Contactor, Interlocked Doors, & Viewing Window
ELECTRONIC OPERATOR INTERFACE (EOI)	
Display	6-Line x 20-Character Graphical Plain-English Back-Lit LCD Display for Programming, Monitoring, & Diagnostics
LED Indicators	Run (Red)/Stop (Green) & Local (Green)
Keys	Local/Remote, Enter, Mon/Prg, Esc, Run, & Stop/Reset
Monitoring	Frequency Command Screen; Multiple Parameters Displayed: Motor Current, Motor Speed, Motor Voltage, DC Voltage, Input Voltage, Output Voltage, Run Time, Output Power, Motor kW, Motor kWH, Motor kVAH, Motor kVAR, & On-Time Control Power
CONSTRUCTION	
Enclosure	ANSI-61 Gray; NEMA 1 Ventilated, & IP20 Per IEC-60529; Gasket & Filter; Free-Standing; Front-Access Only
Power Cables	Top/Bottom Access for Input/Motor Cables
Cooling	Forced-Air Cooled (Redundant Fan Option)
Standards & Compliances	NEC, NEMA, UL, ULC, ANSI, & American Recovery & Reinvestment Act Compliant
AMBIENT CONDITIONS	
Ambient Temperature	0 to 40°C (50°C Option Available)
Altitude	3,281 ft. Above Sea Level (Up to 14,764 ft. Option Available)
Humidity	95% Maximum (Non-Condensing)
Installation	Indoor; No Direct Sunlight; Protect from Corrosive Gases

All Information Subject to Change
**Models Not UL Listed*
***Typical HP Rating of a 4-Pole Motor; Contact Factory for Applications on Constant Torque Loads*

TOSHIBA INDUSTRIAL PRODUCTS:
- Adjustable Speed Drives
- Motors
- Motor Controls
- Instrumentation & PLCs
- Uninterruptible Power Systems

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